

Exhibit 43

SCHOOL DISTRICT/LOCAL GOVERNMENT ENTITY PLAINTIFFS' OPPOSITION TO DEFENDANTS' MOTION TO EXCLUDE TESTIMONY OF SCHOOL DISTRICT EXPERTS

Case No.: 4:22-md-03047-YGR

MDL No. 3047

In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation

Reply Report of Dr. Bryce Ward

Irvington Public Schools



Confidential - Subject to Protective Order

July 31, 2025

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I. SUMMARY

A. Executive Summary of Opinions

1. Based on my analysis and review of materials related to this case, I proffer the following opinions at this time within a reasonable degree of economic certainty based on principles of economic analysis. Should new information become available I reserve the right to revise my analysis, my opinions, or both:

2. In an earlier report (dated May 19, 2025, amended May 31, 2025), I provided an estimate for one component of Irvington Public Schools's past compensatory damages—the amount of money Irvington Public Schools lost while teachers, counselors, and/or administrators diverted time to address issues caused by social media in the school environment.¹ Among other things, Irvington Public Schools claims it should be reimbursed for teacher, counselor, and administrator time diverted and expended due to student social media use.²

3. To calculate these losses, one needs to estimate the amount of time lost to student social media use and the value of that time.

4. In the Irvington Public Schools, Mr. Robert Klein provided an estimate of time loss for teachers (based on a survey), and Dr. April Vauss and Sandra Lopez provided estimates of time loss for other staff based on their knowledge.³

5. My assignment was to produce an estimate of past losses by calculating the compensation or cost of time for relevant staff in the district and multiplying those amounts by the time loss estimates provided by Mr. Klein, Dr. Vauss, and Ms. Lopez.

6. In their replies to my Opening Report, the Defendants' experts, Joshua Hyman, PhD, and Matthew Jennings, EdD, level two criticisms of my report.⁴ First, Dr. Hyman and Dr. Jennings claim the time loss estimates provided by Mr. Klein (Hyman only), Dr. Vauss, and Ms. Lopez (both Hyman and Jennings) are unreliable. Second, Dr. Hyman claims my report purportedly suffers from a "fundamental misunderstanding of the economic concept of 'opportunity cost.'"

7. Dr. Hyman's and Dr. Jennings' critiques of the time loss estimates provided by others are fundamentally not critiques of my cost of time estimates or of the methodology I applied to arrive at my conclusions. My assignment did not include offering opinions on the amount of time lost; rather, my assignment involved providing estimates for the *costs* of time and

¹ Expert Report of Dr. Bryce Ward: Irvington Public Schools dated May 19, 2025, amended May 31, 2025 ("Opening Report").

² See Opening Report, n. 2.

³ May 13, 2025 Affidavit of Dr. April Vauss; May 16, 2025 Affidavit of Sandra Lopez.

⁴ Expert Report of Joshua Hyman, Ph.D. for Irvington Public Schools, dated July 11, 2025 ("Hyman Report"); Expert Report of Matthew Jennings, EdD for Irvington Public Schools, dated July 11, 2025 ("Jennings Report").

multiplying those amounts by the time loss estimates provided by Mr. Klein, Dr. Vauss, and Ms. Lopez.

8. Dr. Hyman’s arguments about my alleged “misunderstanding” of opportunity cost are unfounded. As detailed below, my understanding of opportunity cost is well supported. Moreover, Dr. Hyman does not demonstrate how my alleged misunderstanding would lead to any change in my opinions about the value of any time lost. My approach is well-grounded in the literature on measuring the cost of education programs or interventions. According to this literature, when a program, policy, or other initiative diverts staff time from its alternative use, it is appropriate to value the opportunity cost of this diverted time using the wages and fringe benefits paid to the relevant staff.⁵ This is precisely my approach.

9. Ultimately, neither Dr. Hyman nor Dr. Jennings offers any critique of the information on staff wages or benefits I analyzed, nor do they critique the economic choices or methods I employed to process these data to determine the value of lost time, which was my primary assignment.

B. Qualifications

10. I am a founder of ABMJ Consulting (ABMJ), which provides economic and statistical analysis for complex litigation. I have also served as a Senior Research Professor, Visiting Assistant Professor or a Visiting Adjunct Professor at the University of Montana, Lewis and Clark College, the University of Oregon, and Portland State University, where I taught courses in microeconomic theory, statistics and econometrics, public economics, labor economics, and environmental economics. I have testified on economic matters in administrative, legislative, and court proceedings, and I have presented papers at professional proceedings on economics. I received a Ph.D. in economics from Harvard University.

C. Information Considered

11. I base my opinions described in this report on my past experience and education as well as on the materials specific to this matter that I reviewed and considered. These materials are detailed in the report text, my Opening Report, and in Appendix A.

II. CRITIQUES OF MR. KLEIN, DR. VAUSS, AND MS. LOPEZ

12. Both Dr. Hyman and Dr. Jennings provide critiques of the time loss estimates provided by Mr. Klein, Dr. Vauss, and Ms. Lopez; however, both also wrongly attempt to claim that these are my estimates. At various points, Dr. Hyman claims that I “opine” on the share of time lost to social media, and Dr. Jennings refers to “Dr. Ward’s Time Estimates.”⁶ As noted in my report, my assignment did not include providing estimates for (or offering opinions on) time

⁵ See, for instance, Levin, H. M., & McEwan, P. J. (2001). *Cost-effectiveness analysis: Methods and applications* (Second Edition). Sage; Levin, H. M., McEwan, P. J., Belfield, C., Bowden, A. B., & Shand, R. (2017). *Economic evaluation in education: Cost-effectiveness and benefit-cost analysis*. SAGE publications.

⁶ Hyman Report ¶ 189; Jennings Report heading G.

loss.⁷ My assignment involved providing estimates for the value of time and multiplying these time value estimates by the time loss estimates provided by Mr. Klein, Dr. Vauss, and Ms. Lopez.

13. Nevertheless, background research I conducted as part of my assignment found that significant proportions of school staff view student social media use as a significant problem in schools.⁸ As such, one should reasonably expect school staff to report spending non-trivial amounts of time addressing social media and its consequences.

14. Ultimately, Dr. Hyman's and Dr. Jennings' critiques of the time loss estimates are critiques of factual information provided to me by Mr. Klein, Dr. Vauss, and Ms. Lopez. They are not critiques of the information on staff wages or benefits I analyzed, nor are they critiques of the economic choices or methods I employed to process these data to determine the value of lost time (which was my assignment). I apply my estimates for time value to the estimates for time loss provided by fact witnesses and other experts. Dr. Jennings instead only offers his spin on the reliability of the time loss estimates provided by Dr. Vauss and Ms. Lopez,⁹ and Dr. Hyman criticizes Mr. Klein's survey and similarly questions whether the time estimates provided by Dr. Vauss and Ms. Lopez are reasonable.¹⁰ These are critiques of testimony and opinions provided by others, not critiques of my work here.

III. MY ANALYSIS DOES NOT MISUNDERSTAND OPPORTUNITY COST

15. Dr. Hyman also claims my analysis suffers from a "fundamental misunderstanding of the economic concept of 'opportunity cost'" in that I have purportedly failed to consider the "foregone" use of the diverted time.¹¹ This is not true.

16. The concept of opportunity cost is simple. When a scarce resource (e.g., teacher time) is allocated to one use (e.g., addressing social media issues), it cannot be allocated to some other use. The question for my analysis is what value to place on the relevant school staff time that Mr. Klein, Ms. Vauss, and Ms. Lopez reported to me as being allocated to social media use. As noted in Levin et al (2017), "For educational services, the term cost ... refers to the value of all the resources needed to deliver the intervention."¹²

17. Importantly, this approach to costs is the one recommended and used in textbooks, policy manuals, and journal articles that evaluate the cost of education interventions. For instance, textbook discussions of determining the cost of educational interventions use opportunity costs when discussing costs, and they generally value the opportunity cost of staff

⁷ Opening Report ¶ 13.

⁸ Ward Opening Report ¶¶ 23-28. I also note that affidavits I reviewed as part of the 12 reports I submitted on May 19 also confirm that school staff view social media as a significant problem in schools. See list of affidavits in Appendix A.

⁹ Jennings Report ¶¶ 254-263.

¹⁰ Hyman Report ¶¶ 188-189.

¹¹ Hyman Report ¶ 190.

¹² Levin et al (2017), p. 45.

time using wages and benefits.¹³ For instance, Levin and McEwan (2001) note that, “the cost of ... a person is considered to be the monetary value of the salary and fringe benefits.”¹⁴ Similarly, Levin et al (2017) note that if a component of an intervention “requires teachers to reallocate their time from instruction, that time should be counted as an opportunity cost to the school represented by the teachers’ wages and benefits for that time.”¹⁵ Hollands et al (2020) note that when one conducts a cost analysis of an education program:

“you will need to include opportunity costs of resources that have been reallocated from other purposes or contributed in-kind. This means assigning a value to the resource that represents its worth in its best alternative use. In practice, this means including the costs of personnel time spent on the program regardless of whether this time is already covered by a person’s salary...”¹⁶

At numerous points in their guidelines for performing cost analysis, Hollands et al (2020) note that the cost of teacher or staff time assigned to a program is calculated by multiplying the share of time used by the program by annual salary plus benefits.¹⁷ Furthermore, articles that include the costs of educational interventions in their analysis commonly use staff wages and benefits to estimate the relevant personnel costs.¹⁸

18. Dr. Hyman claims that my approach implicitly assumes that:

- “Students would be fully engaged in their education, not suffer from any of the alleged harmful effects of social media, such as purported anxiety or sleep deprivation, and not cause staff time to be ‘diverted to deal with’ any student misbehavior”;
- “[A]bsent ‘diver[sions] to deal with student social media use,’ teachers would optimally use the additional time to educate students,” and that “teachers would use the entire school day to teach”; and

¹³ Levin and McEwan (2001); Levin et al (2017), Lipsey, M. W., Puzio, K., Yun, C., Hebert, M. A., Steinka-Fry, K., Cole, M. W., ... & Busick, M. D. (2012). Translating the Statistical Representation of the Effects of Education Interventions into More Readily Interpretable Forms. *National Center for Special Education Research*.

¹⁴ Levin and McEwan (2001), p. 63.

¹⁵ Levin et al (2017), p. 69.

¹⁶ Hollands, F., Pratt-Williams, J., & Shand, R. (2020). Cost Analysis Standards & Guidelines 1.0. Cost Analysis in Practice (CAP) Project, p. 10.

¹⁷ Hollands et al (2020), pp. 17, 21.

¹⁸ E.g., Jacob, R., Armstrong, C., Bowden, A. B., & Pan, Y. (2016). Leveraging volunteers: An experimental evaluation of a tutoring program for struggling readers. *Journal of Research on Educational Effectiveness*, 9(sup1), 67-92; Levin, H. M., Belfield, C. R., Hollands, F., Bowden, B., Cheng, H., Shand, R., ... & Hanisch-Cerda, B. (2012). Cost-effectiveness analysis of interventions that improve high school completion, Belfield, C. R., Nores, M., Barnett, S., & Schweinhart, L. (2006). The High/Scope Perry Preschool Program: Cost-benefit analysis using data from the age-40 follow up. *Journal of Human resources*, 41(1), 162-190.

- “[T]eacher salaries reflect instructional duties only.”¹⁹

19. None of these assumptions is implicit in, or material to, my approach. That is, my opinion is unchanged even if none of these assumptions hold, and Dr. Hyman fails to provide any evidence that proves that my opinions require these assumptions. That is, he does not show that the values I assign to teacher or other staff time would differ from the values I assume if these assumptions do not hold.

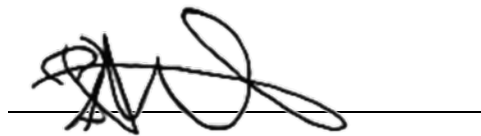
20. My assignment was to assign a value to the time of teachers and other school staff. I use salaries and benefits. The wages and benefits paid to teachers (or the other staff included in my report but not discussed in this part of Dr. Hyman’s critique) are not set or paid assuming that any of these assumptions hold. Salaries and benefits reflect the market value for teachers’ or other school staff members’ time, and the market does not make these assumptions.

21. Dr. Hyman also claims that my report “ignores that school employee salaries and fringe benefits are independent of the frequency with which staff ‘time is redirected away from other tasks’ or the total amount of such ‘redirected time.’”²⁰ This is also untrue. My report implicitly assumes the opposite. I use actual wages and benefit rates. I do not assume that wages or benefit rates would have differed from what they are without social media. I similarly do not assume that social media impacted the number of hours included in employee contracts. Indeed, the opportunity cost approach stems from the idea that employees are paid for a certain number of hours, and time spent addressing social media means school employees have less time to devote to other tasks.

IV. MY LINEAR INTERPOLATION IS CONSERVATIVE

22. Dr. Hyman also wrongly claims that my linear interpolation of missing values is “without support.”²¹ It is common for economists to use linear interpolation when confronted with missing information in damages calculations, and my assumption is not without support. The data from Mr. Klein’s survey for Irvington, as well as other school districts he surveyed, indicate that the time spent on social media increased over this period.²² Similarly, affidavits from employees at different school districts (similar to those of Vauss and Lopez) also indicate that the time spent on social media increased over this period for other school staff.

July 31, 2025



Bryce A. Ward

¹⁹ Hyman Report ¶ 190.

²⁰ Hyman Report ¶ 191.

²¹ Hyman Report ¶ 189.

²² Opening Report, Table 2; analysis of survey data obtained from Mr. Klein (Final Data Analysis_5.12.25.xlsx). See list of affidavits in Appendix A.

APPENDIX A: MATERIALS CONSIDERED

Prior Opening Report dated May 19, 2025, amended May 31, 2025 and all documents cited therein, including Appendix B.

Irvington Documents

Bates
Irvington Board of Education and Irvington Education Association Teacher Unit Agreement, pp. 13-14, 31-35
BW_Irvington00478999
BW_Irvington00479096
BW_Irvington00479187
BW_Irvington00479405
BW_Irvington00479632
BW_Irvington00479968
BW_Irvington00506478
BW_Irvington00659311
BW_Irvington00659326
BW_Irvington00659333
BW_Irvington00659342
BW_Irvington00659363

Articles and Studies

Belfield, C. R., Nores, M., Barnett, S., & Schweinhart, L. (2006). The High/Scope Perry Preschool Program: Cost–benefit analysis using data from the age-40 followup. <i>Journal of Human resources</i> , 41(1), 162-190.
Hollands, F., Pratt-Williams, J., & Shand, R. (2020). Cost Analysis Standards & Guidelines 1.0. Cost Analysis in Practice (CAP) Project.
Jacob, R., Armstrong, C., Bowden, A. B., & Pan, Y. (2016). Leveraging volunteers: An experimental evaluation of a tutoring program for struggling readers. <i>Journal of Research on Educational Effectiveness</i> , 9(sup1), 67-92
Levin, H. M., Belfield, C. R., Hollands, F., Bowden, B., Cheng, H., Shand, R., ... & Hanisch-Cerda, B. (2012). Cost-effectiveness analysis of interventions that improve high school completion
Levin et al (2017), Lipsey, M. W., Puzio, K., Yun, C., Hebert, M. A., Steinka-Fry, K., Cole, M. W., ... & Busick, M. D. (2012). Translating the Statistical Representation of the Effects of Education Interventions into More Readily Interpretable Forms. <i>National Center for Special Education Research</i>
Levin, H. M., McEwan, P. J., Belfield, C., Bowden, A. B., & Shand, R. (2017). <i>Economic evaluation in education: Cost-effectiveness and benefit-cost analysis</i> . SAGE publications.
Levin, H. M., & McEwan, P. J. (2001). <i>Cost-effectiveness analysis: Methods and applications</i> (Second Edition). Sage

Litigation Documents

Expert Report of Brian Osborne for Irvington County School District, dated May 16, 2025
Expert Report of Robert Klein for Irvington County School District, dated May 18, 2025
Expert Report of Joshua Hyman, Ph.D. for Irvington County School District, dated July 11, 2025
Expert Report of Matthew Jennings, EdD for Irvington County School District, dated July 11, 2025
Deposition of April Vauss, dated May 16, 2025
Deposition of Shelly Pettiford 30(b)(6) dated May 13, 2025
Deposition and Exhibits of John Amberg, dated May 14, 2025
Deposition and Exhibits of Darnel Mangan, dated May 21, 2025,
Deposition and Exhibits of Kcyied Zahir, dated May 20, 2025

Affidavits

Breathitt	William Noble Affidavit
	Daphne Noble Affidavit
	Phillip Watts Affidavit
	Kera Howard Affidavit
	Jeremy Hall Affidavit
Charleston	Anita Huggins Affidavit
	Lisa Katherine Allison Affidavit
Chatham	Objections and Responses to ROG 3
Harford	Bernard Hennigan Deposition Testimony
	Sean Bulson Deposition Testimony
	Donoven Brooks Deposition Testimony
Hillsborough	Myrna Hogue Affidavit
	Jaime Gerding Affidavit
	Gary Brady Affidavit
Irvington	April Vauss Affidavit
	Sandra Lopez Affidavit
Jordan	Stacee Worthen Affidavit
	Brad Sorenson Affidavit
	McKinley Withers Affidavit
	Fulvia Franco Affidavit
Saint Charles	Jason Madere Affidavit
	Sean Dwyer Affidavit

Spartanburg	Alan C. Eggert Deposition Testimony
	Funderburk 30(b)(6) Deposition Testimony
Tucson	Brian Lambert Affidavit
	Holly Hammel Affidavit
	Sabrina Salmon Affidavit
	Julie Shivanonda Affidavit

Publicly Available Documents

<p>“Public Sector Contracts,” Public Employment Relations Commission, available at https://www.perc.state.nj.us/publicsectorcontracts.nsf</p>
<p>“Agreement Between the Irvington Board of Education and Irvington Education Association Teacher Unit, July 1, 2019-June 30, 2024,” February 15, 2018, Irvington Board of Education, available at https://www.perc.state.nj.us/publicsectorcontracts.nsf/e20dbec295d1a49c85256f2b00591946/b926b6918a3786bd852589b400484f68/\$FILE/Irvington%20BE%20and%20Irvington%20EA%20teachers%202019.pdf, pp. 28-30.</p>
<p>“Agreement Covering Conditions of Employment for the Administrative Staff, Mutually Adopted by the Board of Education, Irvington Union Free School District and The Irvington Administrators’ Association, effective July 1, 2024, through June 30, 2030,” Irvington Union Free School District, available at https://www.irvingtonschools.org/cms/lib/NY02208289/Centricity/Domain/2213/IAA%20Final%20Contract%202024-2030.pdf.</p>
<p>National Association of School Nurses. What nurses do. https://www.nasn.org/advocacy/advocacy-what-school-nurses-do</p>